

FY2022 NDAA: Research, Development, Test and Evaluation Authorizations

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The National Defense Authorization Act (NDAA) typically authorizes appropriations for Department of Defense (DOD) [research, development, test and evaluation](#) (RDT&E) programs in Title II of Division A. RDT&E accounts fund [a range of activities](#) carried out by DOD, as well as laboratories in other federal agencies, universities, private-sector companies, and other entities. The NDAA authorizes appropriations for RDT&E accounts of the Army, Navy, Air Force, and Space Force. The Research, Development, Test and Evaluation, Defense-Wide, account funds activities of the Missile Defense Agency (MDA), Defense Advanced Research Projects Agency (DARPA), and other agencies reporting to the Office of the Secretary of Defense. The Operational Test and Evaluation, Defense account funds the Office of the Director of Operational Test and Evaluation and related activities.

Summary of RDT&E Authorizations

President's Budget Request

The FY2022 President's budget requested [\\$112 billion](#) in discretionary funding for DOD RDT&E programs—\$5.5 billion (5%) more than the enacted FY2021 level. In a [memorandum](#) to DOD employees, Secretary of Defense Lloyd J. Austin III said DOD's ability to innovate “at a speed and scale” to counter threats depends in part on “a commitment to rapid experimentation and fielding of capabilities.” In an [overview](#) of the FY2022 budget request, DOD described the level of [RDT&E funding](#) as “the most ever.” The document also identified amounts for certain advanced technologies, including

- \$3.8 billion for [hypersonic](#) technologies (e.g., the Army's Long Range Hypersonic Weapon, or LRHW; the Navy's Conventional Prompt Strike, or CPS; and the Air Force's Advanced Rapid Response Weapon, or ARRW);
- \$2.3 billion for various microelectronics efforts;
- \$874 million for [artificial intelligence](#) activities; and
- \$398 million for [5G](#) wireless networks.

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House-Passed NDAA

The House-passed NDAA (H.R. 4350) would have authorized **\$118.1 billion** for RDT&E programs—\$6.1 billion (5.5%) more than the request. The House legislation would have authorized \$7.4 billion in increases to the request (i.e., funding beyond the amounts for certain programs requested in the budget or for programs not requested in the budget). The net effect of these increases would have been offset by \$1.3 billion in decreases to the request.

SASC-Reported NDAA

The SASC-reported NDAA (S. 2792) would have authorized **\$116.1 billion** for RDT&E programs—\$4.2 billion (3.7%) more than the request. The SASC legislation would have authorized \$4.4 billion in increases to the request. The net effect of these increases would have been offset by more than \$0.2 billion in decreases to the request.

Enacted NDAA

The enacted NDAA (S. 1605; P.L. 117-81) authorized **\$117.7 billion** for RDT&E programs—\$5.8 billion (5.1%) more than the request. The legislation authorized \$6.5 billion in increases to the request, including for certain DOD **unfunded priorities**. The net effect of these increases was offset by \$0.7 billion in decreases to the request. Among the accounts with the biggest increases from the request were RDT&E, Defense-Wide and Operational Test and Evaluation, Defense. See **Table 1**.

Table 1. Summary of Research and Development Authorizations in the FY2022 NDAA

(in billions of dollars)

Account	Request	House-passed	SASC-reported	Enacted	Difference (%)
RDT&E, Army	\$12.80	\$13.41	\$13.11	\$13.31	4.0%
RDT&E, Navy	\$22.64	\$23.18	\$23.77	\$23.10	2.0%
RDT&E, Air Force	\$39.18	\$39.44	\$40.10	\$40.50	3.4%
RDT&E, Space Force	\$11.27	\$11.60	\$11.80	\$11.79	4.6%
RDT&E, Defense-Wide	\$25.86	\$30.25	\$27.13	\$28.78	11.3%
OT&E, Defense	\$0.22	\$0.22	\$0.24	\$0.24	9.2%
Total	\$111.96	\$118.11	\$116.14	\$117.73	5.1%

Source: CRS analysis of funding tables in explanatory statement accompanying the FY2022 NDAA (P.L. 117-81) in the *Congressional Record*, December 7, 2021, p. [H7362](#), pp. [H7386-H7416](#).

Notes: Totals may not sum due to rounding. Dollars rounded to nearest hundredth; percentages rounded to nearest tenth. "Difference (%)" column is the percentage difference between enacted and requested amounts.

Selected Increases and Decreases

Among the largest increases, in terms of dollar value, for RDT&E line items from the budget request to the enacted NDAA were

- **\$315 million** for defense-wide information and communications technology to implement recommendations from the National Security Commission on Artificial Intelligence, among other activities;

- **\$263 million** for Air Force aerospace sensors to conduct applied research on microelectronics, among other activities;
- **\$257 million** for Air Force advanced engine development of prototype turbines for next-generation combat aircraft;
- **\$246.3 million** for the defense-wide manufacturing science and technology program for biotechnology innovation, among other activities; and
- **\$218 million** for defense-wide technology analysis to support research into using existing radiofrequency signals—so-called signals of opportunity—to obtain position, navigating, and timing (PNT) information, among other activities.

Among the largest decreases, in terms of dollar value, for RDT&E line items from the budget request to the enacted NDAA were

- **\$89.8 million** for Army technology maturation initiatives;
- **\$64.6 million** for the ballistic missile defense segment intended to destroy short- to intermediate-range missiles during their final phase of flight;
- **\$60.1 million** for Navy (Take Charge and Move Out) TACAMO modernization to develop a replacement for E-6 command-and-control aircraft, designed to provide a secure communications platform during a nuclear attack;
- **\$55 million** for Air Force B-52 squadrons for work related to the Commercial Engine Replacement Program (**CERP**) to replace the TF33 engines on the bomber fleet; and
- **\$47 million** for Navy unmanned surface vehicle enabling capabilities, including autonomy development, machinery qualification efforts, and sensor acquisition, among others.

Hawaii Radar

The enacted NDAA authorized **\$75 million** for the Homeland Defense Radar-Hawaii, a missile defense radar intended to help defend Hawaii from long-range ballistic missile threats and to address operational requirements of U.S. Northern Command and U.S. Indo-Pacific Command. The latter had requested **\$60 million** (in RDT&E and military construction funding) on its unfunded priorities list for the radar and related infrastructure to begin operating the system in FY2024. The Administration had **opposed** additional funding for the radar in part because other associated systems have been delayed or canceled. It argued, “Hawaii is currently defended against missile threats to the same extent as the rest of the United States, and DOD is currently investing in other capabilities, such as the Next Generation Interceptor, which will support the long-term defense of Hawaii.”

Software Pilots

For FY2022, DOD requested **\$2.3 billion** for 13 software and digital technology pilot programs within a relatively new budget activity in various RDT&E accounts. **Budget activity 6.8**, created in FY2021, is intended to provide DOD with greater budgetary flexibility for software development in part by **allowing** such funding to be used for “agile research, development, test and evaluation, procurement, production, modification, and operation and maintenance.” The enacted NDAA supported the Administration’s request for the pilot programs, and authorized an additional **\$36 million** for the defense-wide Algorithmic Warfare Cross Functional Team initiative, formerly known as Project Maven, which seeks to accelerate the **integration of artificial intelligence** into DOD systems.

Community Project Funding Items

Within RDT&E accounts, the enacted NDAA authorized \$98 million for 29 [earmarks](#) (also known as congressionally directed spending or [Community Project Funding](#) items).

Author Information

Brendan W. McGarry
Analyst in U.S. Defense Budget

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